

THE CLAIMS

What is claimed is:

1. A thermal management system for high-capacity battery cooling, said thermal management system comprising at least one of (I) a cooling gas motive driver, constructed and arranged to direct cooling gas on at least a portion of the high-capacity battery during at least one of (a) fast charging of the battery, and (b) use of the battery generating heat, and (II) a terminal and strap cover mountable on a terminal of the battery to cover the terminal and a strap connected thereto, said cover including a main top member and a circumscribing sidewall joined to the main top member, wherein the main top member has cooling gas flow openings therein, and the circumscribing sidewall includes side portions and end portions, wherein said side portions and end portions have cooling gas flow openings therein.
2. The thermal management system of claim 1, comprising (I).
3. The thermal management system of claim 1, comprising (II).
4. The thermal management system of claim 1, comprising (I) and (II).
5. The thermal management system of claim 1, wherein said cooling gas motive driver comprises a fan.
6. The thermal management system of claim 5, wherein said fan comprises a down-flow fan positioned to direct cooling gas downwardly onto the battery.

7. The thermal management system of claim 1, as mounted on a battery-powered structure.
8. The thermal management system of claim 1, as mounted on a battery-powered vehicle.
9. The thermal management system of claim 1, as mounted on a forklift battery-powered truck.
10. The thermal management system of claim 9, comprising (I).
11. The thermal management system of claim 9, comprising (II).
12. The thermal management system of claim 9, comprising (I) and (II).
13. The thermal management system of claim 10, wherein the cooling gas motive driver is mounted on a plate member overlying the high-capacity battery.
14. The thermal management system of claim 13, wherein the cooling gas motive driver comprises multiple down-flow fans mounted at corresponding openings in said plate member and arranged to effect flow of cooling gas over terminals of the high capacity battery.
15. A battery-powered vehicle including a thermal management system as claimed in claim 1.

16. The battery-powered vehicle of claim 15, wherein the thermal management system comprises (I).
17. The battery-powered vehicle of claim 15, wherein the thermal management system comprises (II).
18. The battery-powered vehicle of claim 15, wherein the thermal management system comprises (I) and (II).
19. The battery-powered vehicle of claim 15, including an array of high-capacity batteries.
20. A cover for mounting on terminal and strap structure of a battery, said cover including a main top member of elongate form, having an array of openings therein, with said main top member being joined at its edges to a downwardly extending circumscribing wall terminating at its lower end in an open bottom face communicating with an interior volume of the cover, said circumscribing wall including openings along end portions and medial portions thereof.
21. The cover of claim 20, wherein said openings along end portions and medial portions of the circumscribing wall comprise vertically extending slot openings.
22. The cover of claim 21, wherein the vertically extending slot openings are defined by a series of laterally spaced-apart vertical ribs extending between the main top member and a circumscribing edge member at the lower end of the circumscribing wall.

23. The cover of claim 22, wherein the array of openings in the main top member comprise circular openings.
24. The cover of claim 23, wherein the array of openings in the main top member further comprise openings, at respective ends of the main top member, of elongate form with rounded extremities.
25. The cover of claim 24, wherein the elongate form openings are each generally aligned with an adjacent edge surface of the main top member.
26. The cover of claim 20, wherein said openings along end portions and medial portions of the circumscribing wall comprise slotted and slatted openings.
27. The cover of claim 20, wherein the circumscribing wall includes successive vertically spaced-apart slats, wherein each of adjacent slats defines therebetween a rectangular opening.
28. The cover of claim 27, wherein the openings on the main top member comprise circular openings.
29. The cover of claim 20, wherein the circumscribing wall includes laterally spaced-apart vertically extending spar elements having vertically spaced-apart slats extending therebetween to form slotted and slatted openings.
30. The cover of claim 20, wherein spar elements are laterally spaced apart around the full circumferential extent of the circumscribing wall to form a corresponding series of arrays of slotted and slatted openings.

31. The cover of claim 20, further comprising on respective end portions of the circumscribing wall vertically extending, laterally spaced-apart ribs for press-fit mounting of the cover on battery terminals.
32. A method of thermally managing a high-capacity battery including terminal and strap structure, at least during fast charging of the battery, said method comprising directionally flowing cooling gas onto the terminal and strap structure of the battery to dissipate heat generated by the battery.
33. The method of claim 32, further comprising covering the terminal and strap structure of the battery with a cover including a main top member and a circumscribing wall depending downwardly from the main top member, wherein the main top member and circumscribing wall have openings therein of a size, shape, and density for flow of said cooling gas therethrough to dissipate heat generated by the battery.